

STATE OF WASHINGTON
STATE BUILDING CODE COUNCIL

Log No. <u>046</u> Proponent Rev 05/13/22

2015 Washington State Energy Code Development

Energy Code Proposal Short Form

For editorial <u>Coordination, Clarifications & Corrections</u> only, without substantive energy or cost impacts

Code being amended:	Commercial Provisions	Residential Provisions
	(A MS Word version of the	e code is linked to the name)

Code Section # R403.5.X, R403.5.4

Brief Description:

This new section uses the same Water Volume Determination that already exists in the WSEC-C in section C404.3.2.1 and Table C404.3.2.1. This update has been provided to most easily align residential and commercial hot water service volume calculations in piping. This is only a description and not a requirement or prescriptive measure, no energy savings or penalties are involved.

Proposed code change text: (Copy the existing text from the Integrated Draft, linked above, and then use <u>underline</u> for new text and strikeout for text to be deleted.)

R403.5.4 Water Volume Determination

The volume shall be the sum of the internal volumes of pipe, fittings, valves, meters, and manifolds between the nearest source of heated water and the termination of the fixture supply pipe. Water heaters, circulating water systems and heat trace temperature maintenance systems shall be considered to be sources of heated water. The volume in the piping shall be determined from Table R403.5.4.1. The volume contained within fixture shutoff valves, within flexible water supply connectors to a fixture fitting and within a fixture fitting shall not be included in the water volume determination. Where heated water is supplied by a recirculating system or heat traced piping, the volume shall include the portion of the fitting on the branch pipe that supplies water to the fixture.

The water volume in the piping shall be calculated in accordance with this section. Water heaters, circulating water systems and heat trace temperature maintenance systems shall be considered to be sources of heated water. The volume shall be the sum of the internal volumes of pipe, fittings, valves, meters and manifolds between the nearest source of heated water and the termination of the fixture supply pipe. The volume in the piping shall be determined from Table R403.5.4. The volume contained within fixture shutoff valves, within flexible water supply connectors to a fixture fitting and within a fixture fitting shall not be included in the water volume determination. Where heated water is supplied by a recirculating system or heat-traced piping, the volume shall include the portion of the fitting on the branch pipe that supplies water to the fixture.

Table R403.5.4.1

INTERNAL VOLUME OF VARIOUS WATER DISTRIBUTION TUBING

OUNCES OF WATER PER FOOT OF TUBE

Nominal Size	Copper Type	Copper Type	Copper Type	CPVC CTS	CPVC SCH	<u>CPVC</u>	PE-RT	Composite	
(inches)	<u>M</u>	<u>L</u>	<u>K</u>	<u>SDR 11</u>	<u>40</u>	SCH 80	<u>SDR 9</u>	<u>ASTM</u> <u>F1281</u>	PEX CTS SDR 9
<u>3/8</u>	1.06	<u>0.97</u>	0.84	<u>N/A</u>	<u>1.17</u>	=	<u>0.64</u>	0.63	0.64
<u>1/2</u>	1.69	<u>1.55</u>	<u>1.45</u>	<u>1.25</u>	1.89	<u>1.46</u>	<u>1.18</u>	<u>1.31</u>	1.18
3/ <u>4</u>	3.43	3.22	2.90	<u>2.67</u>	3.38	<u>2.74</u>	<u>2.35</u>	3.39	<u>2.35</u>
<u>1</u>	5.81	<u>5.49</u>	<u>5.17</u>	<u>4.43</u>	<u>5.53</u>	<u>4.57</u>	<u>3.91</u>	<u>5.56</u>	<u>3.91</u>
<u>1¹/₄</u>	8.70	<u>8.36</u>	<u>8.09</u>	<u>6.61</u>	9.66	<u>8.24</u>	<u>5.81</u>	8.49	<u>5.81</u>
$1^{1}/_{2}$	12.18	11.83	<u>11.45</u>	9.22	13.20	<u>11.38</u>	<u>8.09</u>	13.88	8.09
<u>2</u>	21.08	20.58	20.04	<u>15.79</u>	21.88	<u>19.11</u>	13.86	21.48	<u>13.86</u>

For SI: 1 foot = 304.8 mm, 1 inch = 25.4 mm, 1 liquid ounce = 0.030 L, 1 oz/ft²= 305.15 g/m^2 .

N/A = Not Available.

Purpose of code change:

Language needs to be introduced into the prescriptive portion of the code's Systems section to be referenced in new R406 Additional Efficiency Requirements code proposal submitted separately.

Your name Dan Wildenhaus Email address dwildenhaus@trccompanies.com

Your organization TRC, BetterBuiltNW Phone number 772.932.4994

Other contact name Click here to enter text.

<u>Instructions</u>: For use with <u>Coordination, Clarifications & Corrections ONLY</u>. Send this form as an email attachment, along with any other documentation available, to: <u>sbcc@des.wa.gov</u>. For further information, call the State Building Code Council at 360-407-9277.